

WHAT IS CLAIMED IS:

1. A medical valve for controlling the flow of fluid between a first medical implement and a second medical implement, the valve comprising:

a body comprising an opening adapted to receive the first medical implement, and a wall structure defining an internal cavity adapted for fluid communication with the second medical implement, the cavity comprising a neck portion in fluid communication with the opening and a main portion with a larger internal diameter than the neck portion; and

a flexible element positioned in the cavity movable between an uncompressed position in which a portion of the flexible element bears against the wall structure near the opening and obstructs fluid flow through the valve and a compressed position in which fluid flow is permitted through the valve, the flexible element comprising a wall with an inner surface and an outer surface, the wall flexing to accommodate axial compression of the flexible element, the flexible element in the uncompressed position comprising a first external diameter near the opening, a second external diameter in the neck portion and a third external diameter in the main portion, the second diameter being smaller than the first diameter and the third diameter, and at least a portion of the outer surface of the wall of the flexible element between the second diameter and the third diameter being tapered.

2. The valve of Claim 1, wherein an end of the flexible element near the opening of the body in its uncompressed position is substantially flat.

3. The valve of Claim 1, wherein the flexible element in the uncompressed position has an end substantially flush with the opening of the cavity of the body.

4. The valve of Claim 1, wherein the medical valve further comprises a support member enabling the valve to be removably attached to a fluid dispenser.

5. The valve of Claim 1, wherein the flexible element comprises a single molding.

6. The valve of Claim 1, further comprising:

a rigid member positioned within the flexible element to assist in supporting the flexible element and to assist in maintaining the flexible element along an axial

centerline of the cavity when the flexible element moves between the uncompressed position and the compressed position.

7. The valve of Claim 1, wherein the flexible element substantially completely fills the opening in its uncompressed position.

8. A medical valve for controlling the flow of fluid between a first medical implement and a second medical implement, the valve comprising:

a body comprising an opening adapted to receive the first medical implement, and a wall structure defining an internal cavity adapted for fluid communication with the second medical implement, the cavity comprising a neck portion in fluid communication with the opening and a main portion with a larger internal diameter than the neck portion; and

a flexible element positioned in the cavity movable between an uncompressed position in which a portion of the flexible element bears against the wall structure near the opening and obstructs fluid flow through the valve and a compressed position in which fluid flow is permitted through the valve, the flexible element comprising a wall with an inner surface and an outer surface, the wall flexing to accommodate axial compression of the flexible element, the flexible element in the uncompressed position comprising a first cross-section near the opening having a first internal diameter and a first external diameter, a second cross-section in the neck portion having a second internal diameter and a second external diameter and a third cross-section in the main portion having a third internal diameter and a third external diameter, the second external diameter being smaller than the first external diameter and the third external diameter, and the third internal diameter being greater than the second internal diameter and the second internal diameter being greater than the first internal diameter.

9. The valve of Claim 8, wherein the inner surface in the uncompressed position has a taper between the first cross-section and the second cross-section that is different than a taper between the second cross-section and the third cross-section.

10. The valve of Claim 8, wherein an end of the flexible element near the opening of the body in its uncompressed position is substantially flat.

11. The valve of Claim 8, wherein the flexible element in the uncompressed position has an end substantially flush with the opening of the cavity of the body.

12. The valve of Claim 8, wherein the medical valve further comprises a support member enabling the valve to be removably attached to a fluid dispenser.

13. The valve of Claim 8, wherein the flexible element comprises a single molding.

14. The valve of Claim 8, further comprising:

a rigid member positioned within the flexible element to assist in supporting the flexible element and to assist in maintaining the flexible element along an axial centerline of the cavity when the flexible element moves between the uncompressed position and the compressed position.

15. The valve of Claim 8, wherein the flexible element substantially completely fills the opening in its uncompressed position.

16. A medical valve for controlling the flow of fluid between a first medical implement and a second medical implement, the valve comprising:

a body comprising an opening adapted to receive the first medical implement, and a wall structure defining an internal cavity adapted for fluid communication with the second medical implement, the cavity comprising a neck portion in fluid communication with the opening and a main portion with a larger internal diameter than the neck portion;

a flexible element positioned in the cavity movable between an uncompressed position in which a portion of the flexible element bears against the wall structure near the opening and obstructs fluid flow through the valve and a compressed position in which fluid flow is permitted through the valve, the flexible element comprising a wall with an inner surface and an outer surface, the wall flexing to accommodate axial compression of the flexible element, the flexible element in the uncompressed position comprising a first external diameter near the opening, a second external diameter in the neck portion and a third external diameter in the main portion, the second diameter being smaller than the first diameter and the third diameter, and at

least a portion of the outer surface of the wall of the flexible element between the second diameter and the third diameter being tapered; and

a chamber defined by a volume between the wall structure of the body and the outer surface of the wall of the flexible element, the chamber having a volume that decreases as the flexible element moves from the uncompressed position to the compressed position.

17. The valve of Claim 16, wherein the chamber comprises a gas.

18. The valve of Claim 16, wherein the chamber volume is substantially zero when the flexible element is in the compressed position.

19. The valve of Claim 16, wherein an end of the flexible element near the opening of the body in its uncompressed position is substantially flat.

20. The valve of Claim 16, wherein the flexible element in the uncompressed position has an end substantially flush with the opening of the cavity of the body.

21. The valve of Claim 16, wherein the medical valve further comprises a support member enabling the valve to be removably attached to a fluid dispenser.

22. The valve of Claim 16, wherein the flexible element comprises a single molding.

23. The valve of Claim 16, further comprising:

a rigid member positioned within the flexible element to assist in supporting the flexible element and to assist in maintaining the flexible element along an axial centerline of the cavity when the flexible element moves between the uncompressed position and the compressed position.

24. The valve of Claim 16, wherein the flexible element substantially completely fills the opening in its uncompressed position.